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• HISTORY AND STATUS OF THE GULF OF MEXICO'S MENHADEN PURSE SEINE FISHERY. *Robert B. Chapoton*. Since 1964 the Bureau of Commercial Fisheries has conducted research on the Gulf of Mexico's menhaden purse seine fishery so that guidelines could be established to manage this natural, renewable resource. Data have been gathered on the age and size and growth of Gulf menhaden (*Brevoortia patronus*) in the landings; on the number, size, and operational aspects of the vessels; on the number and location of processing plants, and number of spotter aircraft; on the fishing season and grounds; and on the status of the population supporting this fishery.

The current purse seine fishery began in 1946, when only four carrier vessels landed 38,000 tons. Annual landings have increased since then until, in 1969, 75 vessels landed a new record of 575,000 tons. Since 1963, the Gulf menhaden has supported the largest single commercial fishery in the United States.

Fishing power, the ability of individual vessels to catch and land fish, also increased during the 24-year period, 1945–69. Factors contributing to this increased fishing power include: (1) increased carrying capacity of carrier vessels, (2) increased number of spotter aircraft, (3) power blocks to retrieve the purse seine, (4) synthetic fibers in the net, (5) refrigeration of fish holds, and (6) pumps to transfer the captured fish from the net to the hold.

Age, size, sex, and stage of sexual maturity

of Gulf menhaden in the landings have been systematically sampled since 1964. The contribution of particular ages to the catch have shown marked changes between years. The age distribution for any season has been: Age-1 and -2 fish, 70 to 90 per cent; age-0, -3, -4, and -5, 10 to 30 per cent. Because this fishery depends on 1- and 2-year-old fish and this species is short-lived, wide year-to-year fluctuations in fish abundance and landings have occurred. Catch per unit of effort (CPUE) in 1969 had declined 50 per cent since the early 1950's. The trend from 1946–69 has been summarized by the expression

$$\text{CPUE} = 2.385 - 0.0032 (\text{Effort})$$

where effort is defined as the registered net tonnage of each vessel multiplied by the number of weeks of fishing, then summed for the entire fleet for a season.

The linear form of the surplus-yield model agrees exceptionally well with data from the Gulf menhaden fishery. The annual maximum sustainable yield suggested for this fishery is 445,000 tons, and this is best made with 372,000 units of effort. The average observed fishing effort during the past four seasons (1966–69) exceeds the optimum by 5 per cent. The catch during this period averages 3 per cent less than the calculated maximum sustainable amount. Thus, this fishery appears to be producing the maximum sustainable yield at this time.